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Public High School Graduation and College-Readiness Rates: 1991–2002

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Executive Summary

This study uses a widely respected method to calculate graduation rates, both nationally and for each state, for each public school graduating class from 1991 to 2002. It also combines graduation rate calculations with data provided by the U.S. Department of Education to calculate the percentage of all students who left high school eligible for college in each year. Because the requirements to graduate from high school are set lower than the requirements to apply to a four-year college, many high school graduates are ineligible to enroll.

Findings of the study include:

- The national high school graduation rate for all public school students remained flat over the last decade, going from 72% in 1991 to 71% in 2002.
- Nationally, the percentage of all students who left high school with the skills and qualifications necessary to attend college increased from 25% in 1991 to 34% in 2002. The finding of flat high school graduation rates and increasing college readiness rates is likely the result of the increased standards and accountability programs over the last decade, which have required students to take more challenging courses required for admission to college without pushing those students to drop out of high school.
- The state with the highest graduation rate in the nation in 2002 was New Jersey (89%), followed by Iowa, Wisconsin, and North Dakota (each at 85%). The state with the lowest graduation rate in the nation was South Carolina (53%), followed by Georgia (56%), Tennessee (57%), and Alabama (58%).
- There is a wide disparity in the graduation rates of white and minority students. In the class of 2002, about 78% of white students graduated from high school with a regular diploma, compared to 56% of African-American students and 52% of Hispanic students.
- There is also a large difference among racial and ethnic groups in the percentage of

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WHAT THE PRESS SAID

SUMMARY:
This study calculates high school graduation rates and the percentage of all students who left high school eligible to apply for college from 1991 to 2002. The study finds that during this period the graduation rate went from 72% to 71%, while the college readiness rate increased from 25% to 34%. The authors argue that the finding of flat high school graduation rates and increasing college readiness rates is likely the result of the increased standards and accountability programs over the last decade, which have required students to take more challenging courses required for admission to college without pushing those students to drop out of high school.

students who leave high school eligible for college admission. About 40% of white students, 23% of African-American students, and 20% of Hispanic students who started public high school graduated college-ready in 2002.

- There is very little difference between the number of students who graduate from high school college-ready and the number of students who enroll in college for the first time. This indicates that there is not a large pool of students who have the skills necessary to attend college but do not do so because of lack of funds or other non-academic factors.

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Introduction

Few would debate the importance of earning a high school diploma. Researchers agree that graduating from high school leads to much better life outcomes; parents uniformly desire that their children walk down the aisle in cap in gown; policymakers compete over whose ideas will lead to more high school graduates. The same can be said about the ability to attend college, of which earning a high school diploma is a necessary part. What is less agreed upon, however, is the extent to which public schools are succeeding at graduating students and at preparing those students for higher education.

Unfortunately, even in this era of increased public school accountability and transparency, officially reported graduation rates are often misleading. Some states' official graduation rates are so improbably high that they would be laughable if the issue were not so serious. If parents and policymakers are misled by these official statistics into thinking that their schools are producing a high number of graduates, they might not consider it necessary to reform what could be a failing system.

Even less well known than the percentage of students who leave high school with a diploma is the percentage of students who do so with the qualifications necessary to continue their education at the college level. Many are surprised to learn that a student can graduate from high school with a regular diploma and still lack the necessary academic qualifications to attend even their state's public university. This is because the minimum standards for earning a high school diploma are often lower than those required to enter even a minimally selective four-year college.

This study uses a widely respected method to calculate the percentage of students who graduate from high school. We also combine this method with information from a high-quality dataset produced by the U.S. Department of Education to calculate the percentage of students who leave high school "college-ready"—that is, with the minimum set of skills and credentials required to attend a four-year college. We produce these high school graduation and college-readiness rates for the nation and for each state, overall and broken down by major racial and ethnic groups.

This study also provides important information on the progress that our public educational system has made in producing graduates and college-ready students over the last decade. In this report, we calculate graduation and college-readiness rates for each graduating class from 1991 to 2002.

Our snapshot of public school performance for the class of 2002, the most recent for which data are available, indicates that far fewer students graduate from high school than is usually recognized. According to our calculations, only 71% in the class of 2002 graduated with a regular diploma. Graduation rates for minority students are particularly dire. While 78% of white students graduated from high school in the class of 2002, only 56% of African-American and 52% of Hispanic students did.

Our calculation of the college-readiness rate for the class of 2002 is similarly worrisome. Just over a third (34%) of students who entered ninth grade in public schools left school with both a regular diploma and the abilities and qualifications required even to apply to a four-year college. Again, the situation is particularly bad for minority students. Only 23% of African-American students and 20% of Hispanic students left school college-ready, compared with 40% of white students.

Our calculations of graduation and college-readiness rates over time provide cause for both concern and some optimism. On the one hand, our results indicate that over the last decade, high school graduation rates have remained relatively flat, both overall and for each racial and ethnic group in our analysis. On the other hand, while just about the same percentage of students earned a diploma in 2002 as did a decade ago, the percentage of all students who leave high school with both a diploma and the qualifications to attend a four-year college has improved from 25% in 1991 to 34% for the class of 2002. Thus, our calculations indicate that schools are graduating about the same percentage of students as before, but more of those students who do graduate leave high school with the qualifications necessary to attend college.

The most likely explanation for these results is that the implementation of higher standards in K-12 schools since the early 1990s has led to substantial improvement in the skills of graduates. By increasing the standards necessary to graduate, schools have improved the skills of their students without decreasing their graduation rates. Thus, about the same percentage of students are graduating today as did a decade ago, but today's diplomas seem to be more meaningful.

Many people argue that a large pool of students who are qualified to attend college are prevented from enrolling by a lack of adequate income or other social or demographic hurdles. If this is true, there should be a wide disparity between levels of college readiness and actual college attendance. Calculating college-readiness rates allows us to compare the number of students who are academically prepared to attend college with the number of students who actually enroll in college.

Our evaluation confronts the conventional wisdom that restrictions other than academic preparedness are keeping large numbers of students out of college. We estimate that the number of students who can even be considered for admission to a minimally selective four-year college is very similar to the number of students who actually enroll in college for the first time. Nearly all students who are even minimally qualified to enroll in college already do so.

These findings indicate that in order to substantially increase the number of students who attend college, we must improve the K-12 education system so that it produces more students who leave high school with the qualifications necessary to enroll. This means policies that focus on increasing the demand for college among students after they have left the K-12 system, such as more generous financial aid packages or stronger affirmative-action programs, cannot by themselves increase the number of students who attend college very much.

Previous Research

Unfortunately, the calculations of high school graduation rates that we would hope would be the most reliable—those produced by government agencies—are consistently among the least plausible. At both the national and state levels, officially reported high school graduation rates are routinely inflated.

According to the National Center for Education Statistics (NCES), a division of the U.S. Department of Education, as of 2003 the national high school "completion rate," defined as the percentage of adults twenty-five and older who had completed high school, was 85% (Stoops 2004). While everyone would rather the graduation rate be a full 100%, most would be willing to call an 85% graduation rate tolerable. Unfortunately, this statistic does not square with reality.

The primary problem with the official high school completion rate is that it relies on unreliable data. The NCES uses data collected by the Current Population Survey (CPS), which is a survey administered to a nationally representative sample of households by the U.S. Census. While the CPS adequately fulfills its stated purpose of providing a snapshot of the economic and demographic status of Americans, it is far from an ideal tool for measuring high school graduation.

Like all surveys, the CPS relies upon honest and accurate responses for its calculations. Many respondents are probably unwilling to admit to a survey taker that they are high school dropouts. Furthermore, there are also many respondents who might honestly consider themselves high school graduates even though they did not in fact receive a regular diploma. This latter category may include people who attended high school for four years but did not meet the necessary course requirements for graduation. Also among those who might consider themselves graduates are people who dropped out of high school but later earned a General Educational Development (GED) certificate.

There are several reasons why it is inappropriate to count GED recipients as high school graduates. First, a wide body of research suggests that the life outcomes of GED recipients are far more similar to those of high school dropouts without GEDs than to those of high school graduates. Some researchers have found no distinguishable difference in the economic or social outcomes for GED recipients and other dropouts (see Cameron and Heckman 1993), while others have found that receiving a GED provides some benefit (see Murnane, Willett, and Boudett 1995), but researchers agree that the benefits of a GED are not nearly as large as those of a regular diploma.

It is also inappropriate to count GED recipients as graduates in graduation rate calculations because doing so credits the very schools that failed to graduate these students with their successes. The primary reason we calculate graduation rates is to evaluate the performance of schools. But GED recipients are not truly "graduates" of any particular school. They are high school dropouts who later in life took it upon themselves to earn an alternative certificate.

The CPS is unable to distinguish between those who graduated with a regular diploma and those who received a GED. In fact, the NCES used to separately report those who graduated with a regular diploma and those who earned a GED, but it ended the practice because it realized that it was impossible to correctly distinguish them with CPS data. Thus, while many in the press refer to the NCES calculation as a "graduation rate," the NCES itself refers to it as a high school "completion" rate because of the CPS's inability to distinguish GED recipients from high school graduates.

Another limitation of the NCES official calculation is that the CPS is also unable to distinguish graduates from public and private high schools. Members of the public are particularly concerned with evaluating the success of the public schools that their tax dollars support at producing high school graduates. Unfortunately, the official government number does not provide them with any information on their own school system.

Finally, since the primary concern of the CPS is to measure the economic and

demographic characteristics of the employable population, it does not survey members of institutionalized populations. Among these are people who are in prison or mental hospitals, which also happen to house a disproportionate number of the nation's high school dropouts. Defenders of calculating graduation rates with the CPS sometimes counter that the CPS also excludes members of the military, where people are disproportionately likely to have graduated from high school, and thus the bias from excluding prisons and mental hospitals is probably counterbalanced. Unfortunately, the problem raised by a particular bias in a survey is not necessarily alleviated by the addition of a second bias.

All of these problems associated with the CPS combine to render its "completion rate" simply unreliable as a measurement of the graduation rate. Its 85% estimate not only exceeds most independent calculations of the graduation rate; it defies common sense. There were a total of 3,852,077 public school ninth-graders during the 1998–99 school year. In 2001–02, when that class was graduating, only 2,632,182 regular high school diplomas were distributed. Simply dividing these numbers produces a (very rough) graduation rate estimate of 68%. This rough method is not sophisticated enough to be definitive, but it gives us good reason to conclude that the CPS graduation rate of 85% is implausible. Thus, any method for calculating graduation rates that relies upon the CPS is undesirable. This is especially true considering that there are other methods available that, while imperfect, have far less damaging biases.

The methods used by individual states to calculate their own official graduation rates are also routinely flawed and produce unreasonable results. In a recent report, the Education Trust (2003) compared the official graduation rate reported by each state under the No Child Left Behind Act with an independent calculation of its graduation rate.[1] The report found that many officially reported graduation rates are implausibly high.

Many state methods for calculating graduation rates rely on district or school reports of the number of dropouts they have had in a given year. Typically, such methods might divide the number of students who received a diploma in a given year by the number of students who received a diploma that year plus the number of students who were reported to have dropped out in that year and the previous three years. While this kind of method seems reasonable, its reliance on schools' correctly reporting their dropout numbers often produces implausible graduation rates.

Following individual students over long periods of time is an expensive and time-consuming task for which individual schools are not well equipped. Often, schools have no way of easily knowing whether a student who is no longer in their classrooms has dropped out, left for a private school, or moved to another public school district. Furthermore, schools have a strong incentive not to report children as dropouts because they wish to report the highest possible graduation rate. This combination of schools having neither the resources nor the incentive to properly count the number of their students who drop out usually leads to inflated graduation rate statistics.

Some states have spent a great deal of time and resources to implement high-tech student-tracking systems in order to remove the responsibility of tracking students from individual schools and districts, placing the burden on their own shoulders. In theory, a system that reliably tracks individual students over time should be an ideal remedy. In practice, however, the sophistication of the tracking technology, while it removes reporting error, also empowers states to inflate their graduation rates in other ways.

The most common way that states with student-tracking systems inflate their graduation rates is by developing categories into which they can place students who have dropped out of school without actually counting them as dropouts. This practice has been most

famously utilized in Texas, where the state's official graduation rate of near 95% has been the subject of several exposés, including by the *New York Times* (Schemo 2004) and CBS News's *60 Minutes II* (2004). For example, Texas not only counts GED recipients as graduates; it also counts as graduates those who declare that they intend to acquire a GED someday. It also developed other categories of students who were dropouts by any reasonable definition but who were excluded from the state's graduation rate calculation. [2] In nearly all cases, the information collected in these tracking systems is not made available to researchers for independent confirmation because of privacy concerns.

Instead of unreliable surveys and dropout counts, most independent calculations of graduation rates, including the method used in this study, rely on enrollments reported by individual schools (see Greene and Forster 2003; Orfield, Olsen, and Wald 2004; Swanson 2004). Unlike the situation with dropout counts, schools have both the means and the incentive to correctly report the number of students they enroll. Taking attendance every day requires much less investment than tracking students who are not in the classroom. Also, since a large portion of the state and federal funds that a school receives is directly related to the size of its enrollment, schools have a strong motivation to count each and every student who walks through their doors. And because school spending is linked to enrollments, state officials have incentives to check enrollment counts for accuracy. Thus, while they are certainly not perfect, there is strong reason to believe that enrollment data are a more reliable foundation on which to base a calculation of graduation rates.

There have also been previous attempts to calculate rates of college readiness. Researchers at the NCES have developed a method for calculating the percentage of students who are college ready. They used several academic indicators to designate students along a range of categories from "marginally or not qualified" to "very highly qualified" for college. A student's readiness for college was based on his grade-point average, class rank, score on the NELS test (an NCES aptitude test), SAT score, and/or ACT score. Each student was judged on his highest-rated criterion. Thus, if a student had an SAT score that made him "somewhat qualified" and a class rank that made him "very highly qualified," the student was labeled "very highly qualified." Also, students were moved up one category if they took "rigorous academic course work," meaning that they had taken at least four years of English, three years each of a natural science, social science, and math, and two years of a foreign language. Students who were "very highly qualified" were demoted to "highly qualified" if they had not taken such rigorous course work. One study using this method found that 64.5% of 1992 high school graduates were minimally qualified for college (Berkner and Chavez 1997).

The NCES definition of college readiness does not align with the way four-year colleges actually select students. Unlike the NCES index, which ranks each student based on his highest-rated category, a college looks at all available information on a student when deciding whether to accept him. A student with a 2.7 GPA, for example, is deemed college-ready by the NCES index regardless of whether he performed particularly poorly on each of the other categories. The NCES adopted this method in order to cope with a lack of data. For many students—particularly low-income minority students—only limited data on academic achievement were available. However, this quick fix for missing data does not correspond to the way four-year colleges actually make enrollment decisions, and it is likely to produce inflated results.

Another major flaw with the NCES index is its treatment of the curriculum that a student has completed. The NCES index gives students a bonus (or, in a few cases, a demotion) based on whether they meet a minimum course-work criterion. Since the NCES reports anyone who is not in the very lowest category as being "college-qualified," shifting students one category up or down does not make much difference. In the college admissions process, by contrast, if a student has not completed a certain minimum set of

classes, he is simply ineligible for enrollment. These students who fail to take certain classes are not moved down a notch; they are removed from consideration for enrollment.

To meaningfully calculate the number of students who are prepared to enter college, we must reproduce, at least approximately, the actual admissions requirements of four-year colleges. No matter what their academic abilities, students cannot be considered college-ready if they are missing qualifications necessary to attend college. This study uses a definition of college readiness that better reflects the enrollment standards set by four-year colleges.

Method

Calculating Public High School Graduation Rates

To calculate graduation rates, we use a revised version of the method developed by Greene (2001). The Greene method estimates the number of students who enter a ninth-grade class, makes some adjustments for changes in population, and then divides the resulting number into the number of students who actually graduated with a regular diploma. Graduation rates calculated with this method are widely considered to be among the best independent evaluations available. They have been used as official calculations of graduation rates by *Education Week*'s annual "Quality Counts" issue (2004) and the Education Trust (2003). Its graduation rate calculations are consistently similar to those produced by the methods of other independent researchers, providing additional evidence of its reliability (see, for example, Orfield, Losen, and Wald 2003).

We use enrollment data provided by the U.S. Department of Education in its Core of Common Data.[3] This dataset includes the official enrollment counts provided by states to the federal government. Data are available between the 1986–87 and 2002–03 school years.

Our first step in calculating the graduation rate is to estimate the number of students who enter ninth grade for the first time in a given year. Unfortunately, ninth-grade enrollment data are inflated because substantial numbers of students repeat that grade (see Haney et. al. 2004). This makes it difficult to isolate the cohort of students who are entering ninth grade for the first time. We cannot simply use the number of students who were in eighth grade in the previous year because many students switch from private schools to public schools between middle school and high school, due to the relatively small number of private high schools. Similarly, we cannot just use the tenth-grade enrollment figures for the following year because by that time, students have already begun to drop out. To estimate the number of students who enter the ninth grade for the first time in a way that minimizes the impact of these problems, we take an average of eighth- , ninth- , and tenth-grade enrollments for that cohort class. For example, to calculate the graduation rate for Texas's graduating class of 2002, we begin by averaging its enrollments for eighth grade in 1997–98 (292,648), ninth grade in 1998–99 (350,743), and tenth grade in 1999–2000 (275,265), producing an estimated cohort of 306,219.[4]

Next, we make adjustments for population changes between a cohort's ninth grade and graduating years. We use data from the U.S. Census to estimate the change in the total number of people in our cohort's age group nationally and in each state.[5] We simply subtract the number of fourteen-year-olds in the population in the summer before our cohort's ninth-grade year from the number of seventeen-year-olds in the population in the summer before the cohort's twelfth-grade year. We then divide this figure by the original fourteen-year-old population to determine the percentage change in the cohort population. For Texas's 2002 graduating class, we subtracted the number of fourteen-year-olds in the

state during the summer of 1998 (299,003) from the number of seventeen-year-olds in the state during the summer of 2001 (323,095) and divided the resulting figure (24,092) by the number of fourteen-year-olds in 1998 (299,003) to get a population change of approximately 8.1%.

To estimate the number of students who should have graduated from high school, we multiply our estimated ninth-grade cohort by the percentage change in the population and add this to our cohort estimate. The resulting figure is the number of students who would have to graduate for the state to have a graduation rate of 100%. For the 2002 graduating class in Texas, we multiplied the number of students we estimated entered the ninth grade (306,219) by the population change (8.1%) and added the resulting growth estimate (24,673) to the ninth-grade cohort estimate (306,219) to get a class of 330,892 students who should have graduated.

Finally, we simply divide the number of diplomas that were actually distributed during our cohort's graduating year (for Texas in 2002, 225,167) by the number of students we estimate should have graduated (330,892). This final calculation produces the estimated graduation rate (68%).

Though our calculation does follow a cohort of students from when they enter high school to when they graduate four years later, it is not a four-year graduation rate. While students who take longer than four years to graduate do exit our cohort, they are replaced by students in previous cohorts who have also taken longer than four years to graduate. Thus, as long as there is not a substantial change in the number of students in each cohort who graduate in more than four years, those students will be included as graduates in our graduation rate calculation.

As illustrated by the example above, our method requires five years of data for each graduating cohort of students. To ensure comparability of the enrollment counts, we limit our study to the data provided by the CCD. Unfortunately, CCD data are only available going back to the 1986–87 school year and up to the 2002–03 school year, so we are only able to calculate graduation rates for cohorts that graduated between 1991 and 2002.

We also calculate graduation rates by race for each state where the necessary information is available. Some states do not have sufficient information for us to report their individual high school graduation rates by race. Some states did not report enrollment information by race to the CCD in every year, and thus could not be included in our calculations. Also, the Greene method is best suited for calculating graduation rates for large cohorts of students where there have not been large changes in population. Therefore, we do not report graduation rates for cohorts where the estimated entering ninth-grade class has fewer than 200 students, or where the change in population exceeds 30%. We also exclude cohorts where fewer than 2,000 students were estimated to have entered the ninth grade and there was a change in the population greater than 20%.[6]

Calculating Public High School College-Readiness Rates

The criteria used in our calculation of college-readiness rates are designed to reproduce the minimum standards of the least selective four-year colleges. There are three hurdles that students must get over in order to leave high school with the qualifications necessary to be considered for college admission. Students must graduate with a regular diploma, have completed a minimum set of course requirements, and be able to read at a basic level. To perform our analysis, we use our graduation rate calculations, described above, along with data from various years of the NAEP High School Transcript Study (HSTS), a survey of a large sample of students that is representative at both the national and regional levels.

The first hurdle that students must pass is that they must graduate from high school with a regular diploma. For this screen, we use our graduation rate calculations described above.

Next, in order to be eligible to enroll in college, students must have a minimum level of academic course work on their transcripts. We surveyed the admissions criteria of minimally selective four-year public colleges and used the least burdensome requirement we found as our transcript screen. In order to meet this requirement, students must have passed four years of English, three years of math, and two years each of natural science, social science, and foreign language.[7] A student who has not completed this necessary course work cannot even be considered for admission to virtually any four-year college.

The third and final screen for college readiness is that a student must be basically literate. To pass this hurdle, a student must score at the basic level or above on the NAEP reading assessment, a nationally respected standardized test that was administered to students and reported as part of the HSTS.[8]

Unlike the NCES method, this method requires a student to pass through all these screens to be considered college-ready. A student who graduated from high school and reads at a basic level but did not take the necessary course work is ineligible for admission to the least selective colleges, and thus is considered not to be college-ready by our standard. This more accurately reproduces the admissions processes of four-year colleges.

Because the HSTS is only representative at the regional level, our calculations of college-readiness rates by state are less precise than are our graduation rate calculations. To calculate college readiness by state, we use each state's high school graduation rate and apply the screen for that state's region as though it were representative of the state itself. This assumes that the transcript and literacy screens of our college-readiness calculations are evenly distributed within a region. While this is not highly accurate, the resulting figures should provide us with a reasonable estimate of each state's college-readiness rate, since the regional number is a function of each of its states' transcript and literacy rates. Also, a considerable portion of students are excluded from being college-ready because they did not graduate from high school, which is the screen that we are able to measure individually for each state.

Unfortunately, the HSTS was only administered to the classes of 1990, 1994, 1998, and 2000. While we are able to calculate college-readiness rates directly for these years, we do not have information on transcripts or literacy specific to the graduating classes in years when the HSTS was not administered. To calculate college-readiness rates in a year when HSTS was not administered, we use that year's calculated high school graduation rate and then impute data for the other two screens by plotting the growth (or decline) on a straight line between the years for which we have information. For example, to compute the college-readiness rate for the class of 1993, we use the high school graduation rate for 1993 and straight-line the growth from 1990 to 1994 on the transcript and literacy screens, using the figure that would have been correct in 1993 if the growth in those screens were consistent over the period. For the classes of 2001 and 2002, we use the transcript and literacy screen on the 2000 HSTS. While the lack of specific data for each year is less than ideal, this method should produce reliable results, since the longest period for which we impute data was only three years.

Results

High School Graduation Rates for the Class of 2002

Table 1 reports high school graduation rates, overall and by race, alphabetically by state

for the class of 2002. The national high school graduation rate for this year was 71%, much lower than the officially reported national graduation rate. The table also shows that minority students are much less likely to graduate from high school than their white peers. About 78% of white students who entered the ninth grade with the class of 2002 graduated with a regular diploma, compared with 56% of African-American and 52% of Hispanic students.

Graduation rates vary considerably among the states.[9] Table 2 ranks the states on their overall graduation rates. New Jersey has the highest graduation rate among the states at 89%. It is followed by Iowa, Wisconsin, and North Dakota, all of which graduated 85% of their students in the class of 2002. At the other end of the spectrum, South Carolina has the lowest graduation rate at 53% and is followed by Georgia (56%), Tennessee (57%), and Alabama (58%).

Tables 3–5 rank the states on their graduation rates for white, African-American, and Hispanic students, respectively. Among the thirty-eight states with the necessary information, Wisconsin (91%) had the highest and Alabama (62%) had the lowest graduation rates for white students. Among the thirty-two states with necessary information, Rhode Island (70%) had the highest and New York the lowest (42%) graduation rates for African-American students. New York also had the lowest graduation rate (36%) for Hispanic students among the eighteen states with necessary information, while Louisiana (73%) had the highest graduation rate for Hispanics.

College-Readiness Rates for the Class of 2002

Our calculations of college-readiness rates by race for the class of 2002 are listed by region in Table 6. Again, it is important to note that our calculations of college readiness are only strictly representative by region. While the state-level numbers should provide a reasonable estimate of college readiness, our regional and national calculations are much more precise estimates.

Nationally, about 34% of all students who entered the class of 2002 left high school with a regular diploma and the other qualifications necessary to apply to a minimally selective four-year college. As with graduation rates, college readiness varies substantially by race. About 40% of white students graduated college-ready in the class of 2002, compared with 23% of African-American and 20% of Hispanic students.

Comparing College-Ready Graduates with Students Actually Entering College

We can translate our estimate of college readiness from a percentage to the number of students who leave high school college-ready by multiplying the college-readiness rate by the number of seventeen-year-olds in the graduating year of our cohort class.[10] This allows us to compare the number of students who left high school with the qualifications necessary to apply to college with the number of students that year who actually enrolled in a four-year college for the first time. If, as many have argued (see for example Fry 2004 and ACSFA 2002), there is a large pool of students who are prepared to go to college but are prevented from doing so by other outside factors, such as lack of sufficient financial resources, then we should find that many more students are college-ready than actually enroll in college.

Table 7 compares our estimated college-ready population for the class of 2002 with the actual number of students who enrolled in a four-year degree-granting institution for the first time in 2001, the most recent year for which postsecondary enrollment information is available from the U.S. Department of Education.[11] The results of this comparison

indicate that there is not a large number of students who are prepared to enter college but do not enroll.

Overall, we estimate that about 1,325,825 students were college-ready in the class of 2002, which is just under 1,374,649, the number of students who actually enrolled in college for the first time the year before. This relationship also holds true for the different racial and ethnic groups. The number of white students who graduated college-ready was about 875,559, compared with about 937,051 white students who enrolled in college. For African-American students, about 113,224 students had the qualifications necessary to apply to college, and 152,252 students actually enrolled. The number of Hispanic students who could apply to college was about 107,893, and 91,189 students entered college.

For the overall number as well as the calculations of white and African-American students, the number of students who entered college for the first time is slightly more than the number of students in the class of 2002 who could apply to college. One explanation for this is that our college-readiness calculations are estimates and not precise calculations. Also, our screens for minimal college readiness do not apply to every single college in America. They are meant to represent the minimum qualifications that a student needs in order to have a reasonable chance to attend college; there are, nonetheless, a few institutions where a student who does not pass our screen can still gain admission. Finally, there are some students who graduated in prior cohorts without the qualifications to apply to four-year colleges and who subsequently became college-ready (e.g., by attending community college). It is unlikely, however, that there are enough of these students to fundamentally distort our results.

These results imply that increasing the number of students who attend college requires improving the K-12 education system so that it produces more students with the qualifications and skills necessary to attend college. Our results indicate that nearly all students who can possibly apply to college already do attend college. Therefore, the only way to substantially increase participation in college is to increase the number of students who exit the K-12 system with the qualifications necessary to apply.

Some might find our results implausible. There is no shortage of anecdotal reports of students who would go to college if only they could afford tuition. However, while it is certainly true that some students are prevented from attending college by factors other than academic readiness, anecdotal reports provide little guidance on estimating the size of this population. When we turn from the anecdotes to the data, we find that it is not large. The number of students who cannot go to college despite being academically qualified is dwarfed by the number who cannot go because they are not academically qualified.

While it is clear from our findings that increasing financial aid or strengthening affirmative-action programs cannot substantially increase college participation, it is important to note that this does not necessarily imply that previous financial aid or affirmative-action policies have not increased the number of students in college. The existence of these programs might be the reason that nearly all students who are college-ready currently enroll in college.

Furthermore, while college certainly is expensive, the future benefits of earning a college degree are more than great enough to justify taking on the expense (even if it must be financed by debt) in hopes of greater future returns. According to the U.S. Census, in 1999 the median income for those twenty-five or older who earned a bachelor's degree was $37,989, compared with $22,448 for a high school graduate who did not attend college. [12] Such a return on investment would make it rational even for people with low incomes to obtain the loans necessary to pay in-state tuition at a public university—provided, of course, that they are able to obtain admission. Considering that there is already a wide

variety of programs designed to help low-income students attend college, and that the return on the investment for attending college justifies its cost, it would be odd if all students with the qualifications necessary to attend college did not do so.

High School Graduation and College-Readiness Rates over Time

Table 8 reports overall high school graduation rates for each of the years for which we have the data necessary to calculate them. We are able to calculate overall graduation rates for each graduating class from 1991 to 2002. Because the CCD did not begin collecting enrollment counts by race until the 1992–93 school year, we are only able to calculate graduation rates by race going back as far as the class of 1997.

Over this decadelong period, the trend in overall national high school graduation rate has remained relatively flat. The graduation rate was 72% for the class of 1991, declined to a low of 69% for the class of 1996, and rose to about 71% for the class of 2002. On the whole, state-level graduation rates also remained relatively consistent, though some states made greater gains and losses than others.

Graduation rates also remained relatively flat for each racial and ethnic category for which we have information, as shown in Tables 9–11. During this period, the graduation rates for white and African-American students each increased by two percentage points, from 76% to 78% and from 54% to 56%, respectively. The graduation rate for Hispanic students remained unchanged at 52% for the classes of 1997 and 2002.

While about the same percentage of students graduated from high school in the classes of 1991 and 2002, a substantially larger percentage of graduates had the qualifications necessary to apply to a four-year college in 2002. Table 12 reports overall college-readiness rates—the percentage of all students who start ninth grade that leaves school college-ready—for the nation and by region and state. The overall national college-readiness rate increased from 25% for the class of 1991 to 34% for the class of 2002.

Tables 13–15 report college-readiness rates from 1997 to 2002 for white, African-American, and Hispanic students, respectively. For white students, the college-readiness rate increased two percentage points, from 38% for the class of 1997 to 40% for the class of 2002. The African-American college-readiness rate increased by four percentage points over this period, from 19% to 23%. Finally, over these five years the Hispanic college-readiness rate increased three percentage points, from 17% to 20%.

The results of our calculations of the high school graduation and college-readiness rates over time are intriguing. We find that the while the high school graduation rate has remained essentially flat over the last decade, the college-readiness rate has increased by about nine percentage points. Thus, about the same percentage of students is earning a diploma, but more of those graduates have the skills and qualifications necessary to apply to a four-year college with today's admissions standards.

There are several possible explanations for this finding. However, the most plausible is that the growth of the standards and accountability movement since the early 1990s has forced schools to improve their curricula in such a way that students who graduate from high school do so with higher qualifications. Essentially, the mismatch between high school graduation requirements and college admissions requirements has been closing without forcing more students to drop out of high school.

The accountability movement has forced schools to substantially increase the standards that students must meet to graduate from high school. Previous evaluations have found

that increasing accountability over this period has led to improvements in standardized test scores (see Raymond and Hanushek 2003 and Carnoy and Loeb 2002). Researchers have also found that this increase in accountability, at least as measured by the implementation or strengthening of high school exit exams, has had no effect on overall high school graduation rates (see Greene and Winters 2004; Jacob 2001; Muller 1998; and Warren and Jenkins 2003).

The findings of these previous studies suggest that by increasing standards, schools are graduating the same percentage of students as before, but that those graduates have stronger academic skills. These results are consistent with our finding of no substantial change in high school graduation rates in the last decade coupled with an increase in college readiness.

Conclusion

Our results have several lessons for policymakers and the public. First, by providing a more accurate estimate of the high school graduation and college-readiness rates, our results shed light on a problem that official statistics are often designed to obscure. Far fewer students graduate from high school than is normally reported by official statistics. We estimate that only about 71% of students who entered the class of 2002 left high school with a regular diploma. The situation is also far more severe for minority students than for white students—a little more than half of African-American and Hispanic students graduate from high school. Our findings indicate that such low graduation rates are a long-standing problem that has not been improving over the last decade—since 1991, the high school graduation rate has been relatively flat.

Even fewer students leave high school with the minimum skills and qualifications necessary to be considered for admission to a four-year college. Only a little more than a third (34%) of all students who entered school in the class of 2002 had the minimum credentials to apply to college when they left. African-American and Hispanic students are much less likely to leave high school with the skills necessary to apply to college than their white counterparts. However, unlike the high school graduation rate, the percentage of students who leave high school able to attend college has improved by about nine percentage points over the last decade.

Our results also provide some reason to believe that the standards and reform movement has been increasing the skills of our high school graduates. The substantial increase in the college-readiness rate despite a flat graduation rate indicates that today's high school graduates leave school with greater skills than their predecessors.

Finally, our results imply that we cannot increase participation in four-year colleges without addressing the problems of the K-12 education system. Our results indicate that there is not a large number of students who are eligible for admission to four-year colleges who do not actually attend. This means that substantially increasing college participation necessarily means increasing the number of students leaving the K-12 system with the skills necessary even to be considered for admission. Thus, reforms that focus on making college attendance less burdensome for those who already have the skills necessary to attend, such as increased financial aid or strengthened affirmative-action policies, cannot substantially increase college enrollment by themselves. Increasing participation in college requires increasing the number of students who have the skills necessary to move on to the next academic level.

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